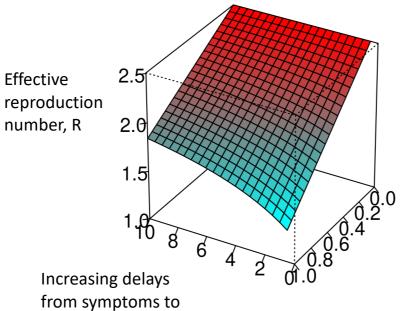
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Supplementary appendix

This appendix formed part of the original submission. We post it as supplied by the authors.

Supplement to: Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet* 2020; published online March 6. http://dx.doi.org/10.1016/S0140-6736(20)30567-5.



care seeking

Increasing proportion of transmission from asymptomatic cases

Key drivers of the effective reproductive number R during mitigation for the model in appendix 2: p fraction of infected individuals with clear symptoms and subject to some level of isolation (minimal level of behaviour change or mandatory self-isolation/hospitalisation); $1/\alpha$, the average number of days it takes from symptom onset to mandatory isolation.

$$R = \frac{\beta_1}{\gamma_1} + (1 - p)\frac{\beta_2}{\gamma_2} + (1 - p)\frac{\beta_3}{\gamma_3} + \frac{pb}{\gamma_2 + \alpha} \left(\beta_2 + \frac{\gamma_2 \beta_3}{\gamma_3}\right) + \frac{p\alpha r}{\gamma_2 + \alpha} \left(\frac{\beta_2}{\gamma_2} + \frac{\beta_3}{\gamma_3}\right)$$

Parameter values from literature and recent data, where available: $1/\sigma = 1$ day, $1/\gamma_1 = 5$ days (3), $1/\gamma_2 = 1/\gamma_1 = 7$ days (17), b = 0.8 (assumed effectiveness of self-imposed isolation), r = 0.01 (assumed effectiveness of mandatory isolation). Transmission rates estimated by setting $R_0 = 2.5$ (3) and with observed doubling time of about 5 days (3): $\beta_1 = 0.25$, $\beta_2 = 0.16$, $\beta_3 = 0.016$. Note that these values are indicative only, the nonlinear shape of the relation between R and control is robust. R does not fall below 1 in this plot, which is without social distancing, contact tracing or quarantine.

For the simulations in the main text, the initial conditions are 625 infections, in a population of 60 million, of which 61 reported. Red line: epidemic with case isolation only; green line: same but with social distancing in place indefinitely (25% lower contact rate after 70 days); blue line: same but with stronger social distancing in place for only four months (50% lower contact rate after 80 days). Parameter values as above, with p = 50% symptomatic, $1/\alpha = 2$ days to isolation.